**Domain: Number and Operations- Fractions Standard Code:.4.NF. 4c Author Name: Becky, Jessie, Kirstin**

**Title of Task: \_\_\_Sheets of Paper\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Adapted from: Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. “Thinking Through a Lesson Protocol: Successfully Implementing High-Level Tasks.”

*Mathematics Teaching in the Middle School 14* (October 2008): 132-138.

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| **PART 1: SELECTING AND SETTING UP A MATHEMATICAL TASK** | |
| What are your mathematical goals for the lesson? (i.e., what do you want  students to know and understand about mathematics as a result of this lesson?) | Students will solves word problems by multiplying a fractions by a whole number. |
| * What are your expectations for students as they work on and complete this task? * What resources or tools will students have to use in their work that will give them entry into, and help them reason through, the task? * How will the students work—   independently, in small groups, or in pairs—to explore this task?   * How will students record and report their work? | Students will use be engaged by talking and listening to each other and being respectful.  Students can use fraction strips, pencil/paper to draw pictures, manipulatives.  Students will work in pairs or small group.  Students will record result on individual papers. |
| How will you introduce students to the activity so as to provide access to *all*  students while maintaining the cognitive demands of the task? | Pull out a ream of paper or a notebook. Talk about space used to show work. |

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| **PART 2: SUPPORTING STUDENTS’ EXPLORATION OF THE TASK** | |
| As students work independently or in small groups, what questions will you ask to—   help a group get started or make progress on the task?   focus students’ thinking on the  key mathematical ideas in the task?   assess students’ understanding of  key mathematical ideas, problem- solving strategies, or the representations?   advance students’ understanding  of the mathematical ideas? | Olivia is doing her math homework. For each problem, she uses ¾ of a sheet of paper. How many sheets of paper will she need to complete 20 problems? |
| How will you ensure that students remain engaged in the task?   What assistance will you give or what questions will you ask a  student (or group) who becomes  quickly frustrated and requests more direction and guidance is  solving the task?   What will you do if a student (or group) finishes the task almost  immediately? How will you  extend the task so as to provide additional challenge? | Questions as needed.  Extentsion:  What about 40 problems?  What about 10 problems?  What if she took up a ¼ of a page for each problem, how many pages would she need to complete all the problems? How many pages would she save? |

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| **PART 3: SHARING AND DISCUSSING THE TASK** | |
| How will you orchestrate the class discussion so that you accomplish your mathematical goals?   Which solution paths do you want to have shared during the  class discussion? In what order will the solutions be presented? Why?   What specific questions will you ask so that students will—  1. make sense of the  mathematical ideas that you want them to learn?  2. expand on, debate, and question the solutions being shared?  3. make connections among the different strategies that are presented?  4. look for patterns?  5. begin to form generalizations?  What will you see or hear that lets you know that *all* students in the class  understand the mathematical ideas that  you intended for them to learn? | Three students will share their strategies.  How did you know how to do that?  Is there any patterns that helped you solve this?  How could you estimate this problem before solving?  Can you come up with a mathematical rule for solving the problem?  How would your answer change if she had 30 problems? I there any strategies that could help solve the problem? |



Sheets of Paper

Olivia is doing her math homework. For each problem, she uses ¾ of a sheet of paper. How many sheets of paper will she need to complete 20 problems?

Extention:

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What about 10 problems?

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